

CLAIMS

ART 34 AMDT

1. A method of fabricating conducting through-connections between the front face (2) and the rear face (3) of a substrate (1), characterized in that it comprises the stages consisting:

- in hollowing into the substrate (1), from the rear-face (3) side, cavities (5) having a depth (P_d) and a cross-section which are defined so as to delimit, by these cavities, studs (4) of defined cross-section which are intended to provide for electrical conduction between the two faces (2, 3),

- in filling in the cavities (5) with a dielectric material (7) in order to insulate the stud from the rest of the substrate and in order to integrate the stud with the substrate,

- in hollowing the front face of the substrate opposite each stud so as to make it show through and thus convert the stud into a conducting through-connection,

- and in physically forming the points (10) of contact opposite each face of each stud (4) showing through by depositing a conducting material (11), insulated from the substrate, on each of these faces.

2. The method of fabricating conducting through-connections between the front face (2) and the rear face (3) of a substrate (1) as claimed in claim 1, characterized in that the filling of the cavities (5) consists:

- in depositing the dielectric material (7) in the cavities (5),

- in removing, from the surface of the substrate (1), the overflows of the deposit of dielectric material (7) by thinning the rear face (3) of the substrate (1) until the studs (4) are uncovered.

3. The method of fabricating conducting through-connections between the front face (2) and the rear face (3) of a substrate (1) as claimed in claim 1,

ART 34 AMDT

- 14 -

characterized in that it consists, after delimiting the studs (4) and before filling in the cavities (5):

- in metallizing the studs (4) by depositing a conducting layer (6) on the studs.

5 4. The method of fabricating conducting through-connections between the front face (2) and the rear face (3) of a substrate (1) as claimed in claim 3, characterized in that the filling-in of the cavities (5) consists:

10 - in depositing the dielectric material (7) in the cavities (5),

- in removing, from the surface of the substrate (1), the overflows of the deposit of the dielectric material (7) by thinning the rear face (3) of the substrate (1) until the studs (4) are uncovered,

- in removing the conducting layer (6) from the surface of the substrate (1), by thinning of the metallized faces (2, 3) of the substrate (1).

5. The method of fabricating conducting through-connections between the front face (2) and the rear face (3) of a substrate (1) as claimed in any one of claims 1 to 4, characterized in that it consists:

20 - in thinning the substrate (1) until the dielectric material contained in the cavities (5) is uncovered so as to make the studs (4) show through on the front face (2) of the substrate (1).

6. The method of fabricating conducting through-connections between the front face (2) and the rear face (3) of a substrate (1) as claimed in either of claims 1 and 2, characterized in that it consists:

30 - in hollowing the front face (2) of the substrate (1) opposite each stud until the dielectric material (7) contained in the cavities (5) is reached, so as to make the studs (4) show through on the front face (2) of the substrate (1).

7. The method of fabricating conducting through-connections between the front face (2) and the rear face (3) of a substrate (1) as claimed in one of claims

- 15 -

1 to 6, characterized in that the physical formation of the points (10) of contact consists:

- in depositing an insulating layer (8) on the same side (2, 3) as the faces of the studs (4) showing through,

- in opening up a contact region (9) opposite each face of the studs (4) showing through by masking and etching of the insulating layer (8),

- in depositing a conducting layer (11) on the same side (2, 3) as the faces of the studs (4) showing through,

- in cutting out the points (10) of contact by masking and etching of the conducting layer (11).

8. The method of fabricating conducting through-connections between the front face (2) and the rear face (3) of a substrate (1) as claimed in any one of claims 1 to 7, characterized in that the dielectric filling material (7) is glass.

9. A substrate (1) of silicon equipped with conducting through-connections between its front face (2) and its rear face (3), characterized in that the conducting connections are silicon studs extending over the entire height of the substrate and are surrounded by a dielectric material which delimits them and keeps them integral with the substrate, these studs showing through on the two faces of the substrate, and points of contact being formed opposite each face showing through of each stud by a conducting material insulated from the substrate.

10. The substrate as claimed in claim 9, characterized in that the silicon studs are coated over their entire height by a conducting metallization itself surrounded by the dielectric material.

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